

## **Listing of Educational Program Themes**

### **1. Wetlands and Water**

The Reserve seeks to provide visitors with an understanding of the role wetlands and water play in an estuary. This theme includes the following concepts and principles:

- An estuary is where a river meets the sea and is a highly productive habitat. Estuaries are affected in multiple ways by the ocean tides and tidal flushing.
- Estuarine wetlands function to filter out toxics from the water, provide flood control and water storage, and are a nursery, feeding area, and breeding area, for many bird and fish species.
- The type and quality of water defines the habitats that exist in a wetland. Types of water include salty, brackish, or fresh.
- The wetland's water quality is a result of the interrelationship of water quality parameters and their effects on the ecosystem. These parameters include human and natural impacts on water quality.
- California has lost 91% of its wetlands.
- Watersheds or drainage basins are important because they supply a wetland with its water. One fourth of the Reserve's watershed is in the United States and three fourths of the watershed is in Mexico.

### **2. Habitat and Wildlife**

The Reserve programs seek to make visitors aware of the interrelationship among Reserve biological communities. This theme includes the following concepts and principles:

- The Reserve encompasses a number of different habitats including salt marsh, mudflats, uplands, riparian, dunes, salt panne, and coastal sage scrub.

- Animals and plants have developed interesting and unusual physical and behavioral adaptations to these habitats which include but are not limited to salt excretion or storage, types of camouflage, types of food consumed, and various protections against specific predators.
- Most of the plants and animals in these habitats are part of food webs where all producers, consumers, and decomposers are interdependent.
- The Reserve located on the Pacific Flyway serves as an important habitat for approximately 320 migratory bird species. The Reserve serves as a stopover spot for some migratory birds and a wintering spot for others.
- The Reserve is also home to many endangered and threatened species, including the light-footed clapper rail, California least tern, Western snowy plover, California brown pelican, least Bell's vireo, Belding's savannah sparrow, and Salt marsh bird's beak. Human activities can cause habitat loss and pollution which threaten these species.

### **3. Human Environment Interaction**

The Reserve seeks to make visitors aware of the Reserve's cultural history and the impact of human activity on the native habitats. This theme includes the following concepts and principles:

- The Reserve has a history of use by the Kumeyaay, ranchos, and the military.
- A number of the plants from the Reserve have traditional uses.
- Many of the plants and animals now found at the Reserve are non-native. The invasion of these plants and animals has disrupted native ecosystems.
- The Reserve's watershed spans the US/Mexico border and pollution entering the watershed does not respect political boundaries.
- The protection and maintenance of the Reserve and its programs occurs through the joint efforts of a number of federal, state, and local agencies.
- The Reserve serves as an important "human refuge" providing open space for the enjoyment of nature through compatible recreational activities.